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Customer Number

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Case No.: 59698US002

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

First Named Inventor: HENDERSON, CHRISTOPHER P  
Application No.: 10/810958 Confirmation No.: 9828  
Filed: 26-MAR-2004 Group Art Unit 3772  
Title: NON-ELASTOMERIC RESPIRATOR MASK THAT HAS DEFORMABLE CHEEK PORTIONS

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**BRIEF ON APPEAL**

Mail Stop: Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**CERTIFICATE OF TRANSMISSION [37 CFR § 1.8(a)]**

I hereby certify that this correspondence is being transmitted to United States Patent and Trademark Office on the date shown below via the Office electronic filing system.

December 17, 2010 /Susan M. Dacko/  
Date Signed by: Susan M. Dacko

Dear Sir:

This is an appeal from the Office Action mailed on July 16, 2010, in light of the Advisory Action mailed September 23, 2010, finally rejecting claims 1 and 3-34.

**Fees**

- ☒ Any required fee under 37 CFR § 41.20(b)(2) will be made at the time of submission via EFS-Web. In the event fees are not or cannot be paid at the time of EFS-Web submission, please charge any fees under 37 CFR § 1.17 which may be required to Deposit Account No. 13-3723.
- ☒ Please charge any additional fees associated with the prosecution of this application to Deposit Account No. 13-3723. This authorization includes the fee for any necessary extension of time under 37 CFR § 1.136(a). To the extent any such extension should become necessary, it is hereby requested.
- ☒ Please credit any overpayment to the same deposit account.

A Notice of Appeal in this application was filed on October 18, 2010.

**REAL PARTY IN INTEREST**

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

**RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any related appeals or interferences.

**STATUS OF CLAIMS**

Claims 1 and 3-34 are pending and have been rejected. These claims are the subject of the present appeal.

**STATUS OF AMENDMENTS**

No amendments have been filed after the final rejection.

**SUMMARY OF CLAIMED SUBJECT MATTER**

In accordance with 37 CFR § 41.34(c)(v), applicants submit a concise explanation of each of the independent claims involved in the appeal, which refers to the specification by page and line number, and to the drawing by reference characters:

1. A respiratory mask<sup>1</sup> 10 that comprises:

(a) mask body 12 that lacks a rigid insert, that is non-elastomeric, and that is adapted for fitting over a person's nose and mouth,<sup>2</sup> the mask body 12 having a nose portion 14, a chin portion 16, first and second cheek portions 18 and 20, and an axis 32 that extends from the nose portion 14 to the chin portion 16,<sup>3</sup> the mask body 12 being constructed to deform such that the first and second cheek portions 18, 20 can move towards each other about the axis 32 when the mask body 12 is held stationary and a force is exerted on the nose and chin portions;<sup>4</sup>

(b) a harness 21 that assists in supporting the mask on a wearer's face;<sup>5</sup> and

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<sup>1</sup> See applicant's specification at FIGs. 1-3.

<sup>2</sup> *Id.* at page 2, lines 19-20.

<sup>3</sup> *Id.* at page 6, lines 18-21.

<sup>4</sup> *Id.* at FIG. 3, page 6, lines 21-27, page 10, line 18 to page 11, line 17.

<sup>5</sup> *Id.* at page 5, lines 7-14.

(c) one or more filter cartridges 28, 30 that are attached to the mask body 12.<sup>6</sup>

32. A mask body 12 that lacks a rigid insert, that is non-elastomeric, and that is adapted for fitting over a person's nose and mouth<sup>7</sup>, the mask body 12 comprising a nose portion 14, a chin portion 16, first and second cheek portions 18, 20, and an axis 32 that extends from the nose portion 18 to the chin portion 20<sup>8</sup>, the mask body further comprising one or more locations for attachment of one or more filter cartridges 28, 30 and being constructed to deform such that the first and second cheek portions 18, 20 can move towards each other about the axis 32 when a force is exerted.<sup>9</sup>

33. A method of making a respiratory mask 10<sup>10</sup>, which method comprises:

forming a mask body 12 not weighing more than 35 g from a non-elastomeric plastic material that has a flexural modulus of greater than 500 MPa<sup>11</sup>, the non-elastomeric plastic material being formed to a cup shape that has an average thickness less than 2 mm and that is adapted for fitting over a person's nose and mouth without inclusion of a rigid insert but with an integrally-formed nose portion 14, chin portion 16, central portion, and first and second cheek portion 18, 20;<sup>12</sup>

securing a harness 21 to the mask body 12;<sup>13</sup> and

providing one or more locations in the mask body 12 for the securement of one or more filter cartridges 28, 30.<sup>14</sup>

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<sup>6</sup> *Id.* at FIGs. 1-3 and page 5, lines 18-21.

<sup>7</sup> *Id.* at page 2, lines 19-20.

<sup>8</sup> *Id.* at page 6, lines 18-21

<sup>9</sup> *Id.* at FIG. 3, page 6, lines 21-27, page 10, line 18 to page 11, line 17.

<sup>10</sup> *Id.* at FIGs. 1-3

<sup>11</sup> *Id.* at the paragraph bridging pages 7 and 8.

<sup>12</sup> *Id.* at page 4, lines 6-7; page 8, line 15; FIGS. 1-3.

<sup>13</sup> *Id.* at page 5, lines 10-11; page 13, lines 3-9.

<sup>14</sup> *Id.* at page 13, lines 9-13.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL****First Ground of Rejection**

Claims 1, 3, 5, 8, 29, and 32 have been rejected under 35 USC § 102(b) for being anticipated by US Patent 4,960,121 to Nelson et al. (Nelson).

**Second Ground of Rejection**

Claims 4, 6, 7, and 18 have been rejected under 35 USC § 103(a) for being unpatentable over Nelson in view of US Patent 6,062,221 to Brostrom et al. (Brostrom).

**Third Ground of Rejection**

Claims 11-17, 19-28, 20-31, and 33-34 have been rejected under 35 USC § 103 for being unpatentable over Nelson.

**ARGUMENT****First Ground of Rejection**

In maintaining this anticipation rejection, the Examiner contends that "the Nelson reference lacks a rigid insert and is of a non-elastomeric material". In taking this position, the Examiner cites column 2, lines 20-40 of Nelson. In this location, Nelson explicitly states that "the half-mask assembly of this invention is indicated generally at 10 and includes four major components, these being a hard shell indicated generally at 12, a face seal indicated generally at 14, a head harness assembly indicated generally at 16, and a pair of harness anchors and adjusters, each of which is indicated generally at 18". Nelson's combination of the hard shell 12 and face seal 14 comprise the mask body. Nelson's hard shell 12 satisfies applicants' definition of a "rigid insert":

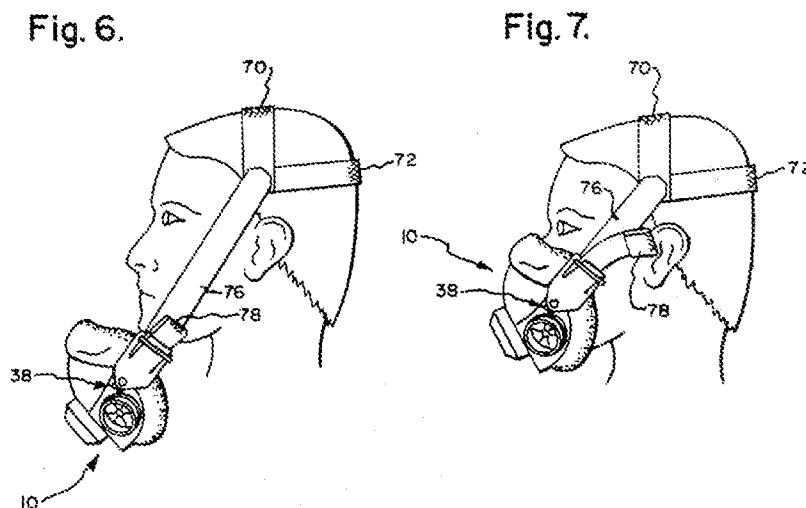
"Rigid insert" refers to a relatively stiff structural member that has been used on respiratory masks to provide adequate structure for attaching fluid communication components such as filter cartridges and exhalation valves while being joined to a more compliant portion that makes contact with and generally conforms to a wearer's face; and

Please also note that applicants have defined the terms "mask body" as follows:

"Mask body" means a structural member that is configured to fit over a person's nose and mouth and that helps define an interior gas space separate from an exterior gas space;

Because Nelson's hard shell 12 clearly satisfies applicants' definition of a rigid insert, it cannot be properly contended that the Nelson mask body lacks such a rigid insert. Since Nelson describes a mask body that contains a rigid insert and since applicants' invention requires a mask body that **lacks** a rigid insert, Nelson would not have anticipated applicants' invention under the terms of 35 USC § 102.

The Examiner also contends that Nelson's mask body is constructed such that its first and second cheek portions can move towards each other about an axis that extends from the nose portion to the chin portion of the mask body. The Examiner asserts that Nelson's Figures 6 and 7 show a mask body that inherently "can move toward each other about an axis when the mask is held stationary and a force is exerted on the nose and chin portions." Although the Examiner believes that Figures 6 and 7 show an inherent mask body deflection, applicants find no support for such a contention in those Figures. Applicants submit that Figures 6 and 7 merely show the respirator 10 being donned by the user:



There is nothing in these Figures which would lead a person of ordinary skill to conclude that the first and second cheek portions can move towards each other about an axis that extends from the nose portion to the chin portion. To the contrary, Nelson describes a hard shell 12 that would preclude a deflection of the cheek portions towards each other. As the Board is aware, any

limitation that is contended to be inherently present in a reference by the USPTO must be described in the reference such that it is the natural result that flows from the disclosure. In other words, the feature in question must be necessarily present in the reference cited. Mere speculation and probabilities do not satisfy the requirements for an inherent disclosure.<sup>15</sup> The Nelson patent indicates that the mask body 10 comprises a hard shell 12. There is nothing in Nelson which indicates that this hard shell would deflect about an axis that extends from the nose portion to the chin portion. In contrast, applicants have designed a respirator that lacks a rigid insert so that such deflection can occur. Nelson therefore also would not have anticipated applicants' invention because there is nothing in Nelson which suggests that this deflection about such an axis is necessarily present.

The Examiner further contends that "it would have been obvious to one having ordinary skill in the art at the time that the invention was made to provide a numerical value of the deflection or a numerical value of the force required for the mask body deflection test, since it has been held that discovering an optimum value of result effective variable involves only routine skill in the art." Firstly, the Examiner is misconstruing the *In re Boesch*<sup>16</sup> decision. *In re Boesch* does not hold that all optimum values of result effective variables involve only routine skill in the art. As the Federal Circuit stated on numerous occasions, each case of obviousness must be decided on its own fact pattern and merits. Applicants have provided numerical values on the degree of deflection in claims 19 and 20 to specify how easily the inventive mask can be deflected so that a better fit can be achieved to a wearer's face. As indicated above, there is nothing in Nelson which indicates that its mask body can be deflected at all, much less at least 5 mm with an average force of 5 Newtons applied to the mask body. Nor is there anything described in Nelson which would lead one to conclude that a deflection of at least 10 mm could occur with an average force of only 5 Newtons being applied to the mask body.

The problem with the Examiner's position regarding claims 19 and 20, however, is that applicants are not merely discovering an optimum value of a result effective variable. Applicants are claiming a respiratory mask that has a different structure and that has distinctly different mask body properties. Nelson, by virtue of its structure, cannot provide the deflections

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<sup>15</sup> *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268-69, 20 USPQ2d 1746 (Fed. Cir. 1991), *reh'ng denied*, (Dec. 26, 1991).

<sup>16</sup> 617 F.2d 272, 205 USPQ 215 (CCPA 1990).

of the cheek portions as outlined in applicants' claims much less provide some optimum value of a result effective variable. Nelson's use of a hard shell would not allow for such an ability. There is nothing in the record to indicate otherwise.

### **Second Ground of Rejection**

Having established the fact that the Nelson reference not only fails to satisfy a number of basic features of applicant's independent claim 1, the dependent claims that are the subject of this rejection are likewise patentable over Nelson, whether taken alone or in combination with Brostrom. Please note that Brostrom also describes a mask body that has a rigid insert. As such, Brostrom adds little to nothing to what is lacking in Nelson; therefore, these documents would not have made applicants' invention obvious to a person of ordinary skill.

### **Third Ground of Rejection**

As indicated above, Nelson fails to teach or suggest a mask body that does not include a rigid insert. The subject matter of claims 33 and 34 both require that the mask body not have a rigid insert. Because Nelson's respiratory mask includes a rigid insert, Nelson surely is not teaching or suggesting the formation of a mask body that lacks such a rigid insert. Thus, Nelson fails to teach or suggest one of the basic features of the subject matter of claim 33. Further, Nelson does not provide any indication of the weight of the mask body; thus it cannot be expected that Nelson is attempting to craft a lightweight respiratory mask that lacks a rigid insert. Additionally, because Nelson indicates that his mask body has a hard shell, it certainly would not exhibit a flexural modulus of greater than 500 MPa. One of the benefits of the present invention is that a mask body can be crafted, which is conformable to a wearer's face while being non-elastomeric. Applicant achieved this by using a thin mask body — that is less than 2 millimeters thick — to enable deformation about an axis that extends from the chin portion to the nose portion. Nelson fails to provide any indication of how to construct such a respiratory mask. Because Nelson teaches a respiratory mask that uses a rigid shell, it clearly teaches away from the formation of the mask body of claim 33. For this reason, applicant believes that the subject matter of claims 33 and 34 would not have been obvious to a person of ordinary skill under the terms of 35 USC § 103(a).

**CONCLUSION**

For the foregoing reasons, appellants respectfully submit that the Examiner has erred in rejecting this application. Please reverse the decision below.

Respectfully submitted,

December 17, 2010

Date

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**CLAIMS APPENDIX**

1. A respiratory mask that comprises:
  - (a) mask body that lacks a rigid insert, that is non-elastomeric, and that is adapted for fitting over a person's nose and mouth, the mask body having a nose portion, a chin portion, first and second cheek portions, and an axis that extends from the nose portion to the chin portion, the mask body being constructed to deform such that the first and second cheek portions can move towards each other about the axis when the mask body is held stationary and a force is exerted on the nose and chin portions;
  - (b) a harness that assists in supporting the mask on a wearer's face; and
  - (c) one or more filter cartridges that are attached to the mask body.
3. The respiratory mask of claim 1, wherein the mask includes first and second filter cartridges that are secured to the first and second cheek portions, respectively.
4. The respiratory mask of claim 3, further comprising an exhalation valve that is located at a central portion of the mask body, and wherein the harness includes a carriage and at least one strap, the carriage covering the exhalation valve and being secured to the mask body at the central portion.
5. The respiratory mask of claim 1, wherein the first and second cheek portions are capable of deflecting inward during normal jaw movement of the wearer.
6. The respiratory mask of claim 1, wherein the harness includes a carriage and at least one strap, the strap(s) being joined to the carriage, and the carriage being centrally mounted to the mask body, the first and second cheek portions of the mask body being capable of being deflected inwards toward the respective cheeks on a wearer in response to tension from the strap(s) when the mask is being worn.
7. The respiratory mask of claim 6, further comprising first and second filter cartridges that are secured to the first and second cheek portions of the mask body, wherein the first and second filter cartridges move inwardly with the first and second cheek portions when

deflection occurs as a result of a force exerted on the nose and chin portions from tension on the at least one strap when the mask is worn.

8. The respiratory mask of claim 1, wherein the mask body further includes a soft deformable material as a face seal, which soft deformable material is secured to a perimeter of the mask body to improve fit of the mask body to a person's face.

9. The respiratory mask of claim 8, wherein the mask body has a foam material secured to the interior of the mask body at the nose portion.

10. The respiratory mask of claim 1, wherein the mask body has a mechanism that allows for attachment of a powered air supply source.

11. The respiratory mask of claim 1, wherein the mask body has an elongation at its elastic limit of less than about 5 percent.

12. The respiratory mask of claim 1, wherein the mask body has an elongation at its elastic limit of less than about 2 percent.

13. The respiratory mask of claim 1, wherein the mask body has an elongation at its elastic limit of less than about 1 percent.

14. The respiratory mask of claim 1, wherein the material from which the mask body is made has a flexural modulus greater than 50 MPa.

15. The respiratory mask of claim 14, wherein the material from which the mask body is made has a flexural modulus greater than 500 MPa.

16. The respiratory mask of claim 15, wherein the material from which the mask body is made has a flexural modulus greater than 1000 MPa.

17. The respiratory mask of claim 16, wherein the material from which the mask body is made has a flexural modulus less than about 4000 MPa.

18. The respiratory mask of claim 6, wherein the strap(s) is capable of applying a force of about 10 to 20 N when the mask is fitted on a wearer's face.

19. The respiratory mask of claim 1, wherein the mask body is capable of exhibiting a deflection of at least 5 mm when an average force of 5 N is applied to the mask body in accordance with the mask body deflection test.

20. The respiratory mask of claim 1, wherein the mask body is capable of exhibiting a deflection of at least 10 mm when an average force of 5 N is applied to the mask body in accordance with the mask body deflection test.

21. The respiratory mask of claim 1, wherein the mask body in naked form does not weigh more than about 35 grams.

22. The respiratory mask of claim 1, wherein the mask body in naked form does not weigh more than 30 grams.

23. The respiratory mask of claim 1, wherein the mask body in naked form does not weigh more than 25 grams.

24. The respiratory mask of claim 23, wherein the mask body in naked form does not weigh more than 10 grams.

25. The respiratory mask of claim 1, wherein the mask body has an average thickness less than about 2 mm.

26. The respiratory mask of claim 1, wherein the mask body has an average thickness less than 1.6 mm.

27. The respiratory mask of claim 1, wherein the mask body has an average thickness less than 1.2 mm.

28. The respiratory mask of claim 27, wherein the mask body has an average thickness greater than about 0.5 mm.

29. The respiratory mask of claim 1, wherein the mask body is constructed from a thermoformed plastic.

30. The respiratory mask of claim 29, wherein the thermoformed plastic comprises polypropylene.

31. The respiratory mask of claim 1, wherein the mask body in naked form weighs less than 35 g, has an average thickness less than 2 mm, and has a flexural modulus greater than 500 MPa.

32. A mask body that lacks a rigid insert, that is non-elastomeric, and that is adapted for fitting over a person's nose and mouth, the mask body comprising a nose portion, a chin portion, first and second cheek portions, and an axis that extends from the nose portion to the chin portion, the mask body further comprising one or more locations for attachment of one or more filter cartridges and being constructed to deform such that the first and second cheek portions can move towards each other about the axis when a force is exerted.

33. A method of making a respiratory mask, which method comprises:  
forming a mask body not weighing more than 35 g from a non-elastomeric plastic material that has a flexural modulus of greater than 500 MPa, the non-elastomeric plastic material being formed to a cup shape that has an average thickness less than 2 mm and that is adapted for fitting over a person's nose and mouth without inclusion of a rigid insert but with an integrally-formed nose portion, chin portion, central portion, and first and second cheek portions;  
securing a harness to the mask body; and  
providing one or more locations in the mask body for the securement of one or more filter cartridges.

34. The method of claim 33, wherein the mask body exhibits a deflection of at least 5 mm when a force of 5 N is applied to the mask body when tested in accordance with the Mask Body Deflection Test.

**EVIDENCE APPENDIX**

None.

**RELATED PROCEEDINGS APPENDIX**

None.